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Date of mailing (day/month/year) 08 October 1999 (08.10.99)	
International application No. PCT/GB99/00719	**Applicant's or agent's file reference** P/61380/GPTU51
International filing date (day/month/year) 10 March 1999 (10.03.99)	**Priority date** (day/month/year) 13 March 1998 (13.03.98)
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1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

23 September 1999 (23.09.99)

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2. The election [X] was

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : H04Q 11/04, 3/00

A1

(11) International Publication Number: WO 99/48322

(43) International Publication Date: 23 September 1999 (23.09.99)

(21) International Application Number: PCT/GB99/00719

(22) International Filing Date: 10 March 1999 (10.03.99)

(30) Priority Data:
9805243.4 13 March 1998 (13.03.98) GB

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(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published

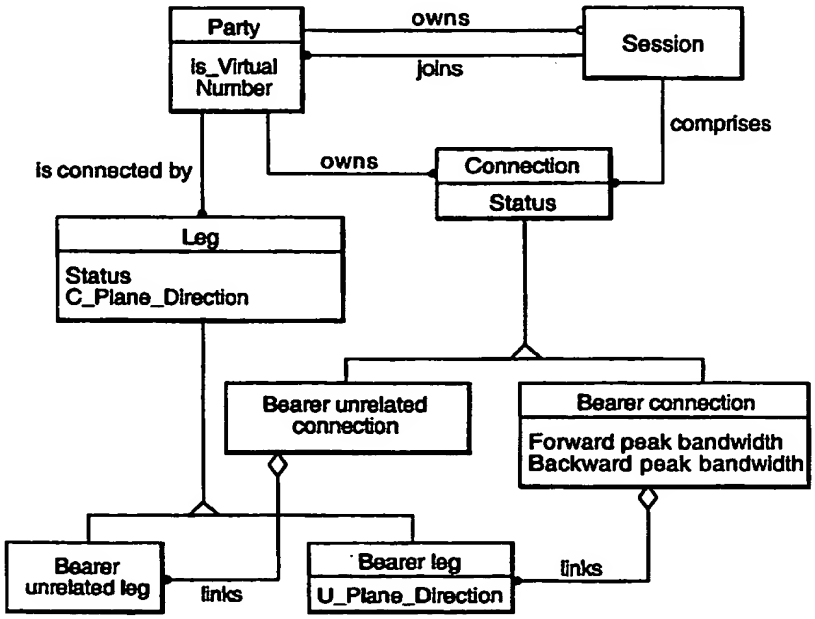
With international search report.

Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: BROADBAND SERVICE CREATION ENVIRONMENT

(57) Abstract

A broadband graphical service creation environment for creating Intelligent Network services for a Broadband Integrated Services Digital Network/Intelligent Network network uses building blocks, a picture editor and code generator, the building blocks being a collection of broadband specific actions, data access and data manipulation routines plus pictorial blocks that define the graphical layout of the service. The broadband service creation environment further has Generic Service Building Blocks capable of running specific message sequence, which sequence can be interrupted by some asynchronous events, wherein once the event is handled, the original message sequence can be resumed and the service creation environment is able to generate Service Logic Programs that can support a finite state machine.



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BROADBAND SERVICE CREATION ENVIRONMENT

1. Introduction

A graphical service creation environment capable of creating Intelligent Network (IN) services for a Broadband-Integrated Services Digital Network/Intelligent Network (B-ISDN/IN) network is described. This broadband service creation environment is based on an extension of an equivalent narrowband product such as GAIN INventor supplied by GPT Limited. GAIN INventor is one of a family of products based on the UNIX™ operating system and a Service Logic Execution Environment (SLEE). The SLEE is designed to support telecommunication services Service Logic Programs and is based on the SLEE API defined in the Bellcore AIN 1.0 standard. As well as residing on the INventor, the SLEE resides on the target environment, the Service Control Point (SCP). One of INventor's features is the graphical service creation environment which allows the creation of telecommunication services using graphical icons connected together to form a service picture. The service picture is a general logical description of a service without any explicit reference to the Service Control Function (SCF/SSF) or Service Switching Function (SRF) interface messages other than those at a higher level.

Section 2 is provided as background material. The approach within the project has been to provide switched broadband services which are extensions to the classical IN architecture as this does not dramatically change the typical service deployment architecture. The Service Switching Points (SSP), Service Control Points (SCPs) and Intelligent Peripherals (IP) have been enhanced to cope with the broadband functionality. The broadband SCP (B-SCP) is realised as enhancements to an existing narrowband

product. Service logic programs required to provide the complex broadband services to run on the B-SCP have been created using a broadband graphical environment (B-SCE).

According to the present invention a broadband graphical service creation environment for creating Intelligent Network services for an Integrated Broadband Service Digital Network/Intelligent Network network, comprising building blocks, a picture editor and code generator, the building blocks being a collection of broadband specific actions, data access and data manipulation routines plus pictorial blocks that define the graphical layout of the service.

The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 shows the Entity Relationship Diagram for the Switching State Model;

Figure 2 shows the State Diagram for the Legs of Figure 1;

Figure 3 shows the State Diagram for the Connection of Figure 1;

Figure 4 shows the Finite State Machine for Broadband Service Control Function;

Figure 5 shows the Message Sequence for the *AddBearer* Option in the *BearerControl* Generic Service Building Blocks;

Figures 6A and 6B combined show the Runtime Action of the *AddBearer* Option in the *BearerControl* GSBB;

Figure 7 shows a table of GSBBs; and

Figure 7 shows a Service Creation Architecture.

2. IN based broadband services

The most significant impacts of a broadband network on IN with respect to service creation are:

- the number of B-ISDN calls that can comprise an IN service are now numerous;
- in dealing with the events relating to the multiple calls, the sequence of arrival of messages at the service logic can be unpredictable;
- the interaction between the network and user that arises from broadband services is of increased complexity.

Solutions to these problems include introducing a switching state model in the Service Switching Function, a finite state machine in the Service Control Function that copes with the asynchronous messages, and by introducing a "very intelligent" Intelligent Peripheral to handle the complex user interaction.

2.1 Switching State Model

The Switching State Model (SSM) is a function within the B-SSP that has the task of co-ordinating the events and detection points (DPs) from the several Basic Call State Models that form a service session. It offers an object-oriented view of the network elements and resources of the call control function (CCF) to the service logic. This object model removes the complexity at the B-SCP to co-ordinate the DPs at the service logic. The model is capable of representing both abstract attributes like ownership of the session, as well as more concrete elements of the call like parties and connections. Figure 1 shows the entity relationship diagram for the switching state model.

Within this model several parties can join a session, where a session is a representation of a complete call configuration as seen by an IN service, and a party represents real end users or network nodes like the B-IP or even the B-SCP. Between such parties, connections can be established, where connections can either be bearer related or bearer unrelated. A connection is composed of several legs, where the leg represents the communication path to a party which is connected to other parties by a connection. A significant attribute of connections and legs is the status. This represents the status of the respective object in the call processing. Figures 2 and 3 show the state diagrams for the bearer and leg objects. Changes in the status attribute of legs and connections can be reported to the service logic when a state change takes place.

2.2 The Broadband INAP

The information flows between the B-SCF and the B-SSF are based on the abstract representation of the SSM model. The B-SCF is only able to manipulate the objects in the model, and as a result the operations for the information flows only allow such object manipulation.

The protocol between the B-SSP and B-SCP that has emerged is based on the manipulation of the objects represented in the SSM model. Verbs such as *Add and Delete* are applied to objects such as parties and connection to provide this protocol. For example if the service logic wishes to add a new bearer connection between two parties in the existing IN session, the operation *AddBearerToSession* is uses to instruct the B-SSP to perform this operation. This has led to a Broadband IN Application Protocol (B-INAP) that is different from the current IN-CS 1 or 2 standard but has similarities with

the emerging IN-CS3.2 standard. The B-SCP maintains its own view of the SSM model as relationship information is transmitted in the information flows. The model in the B-SCF is aligned with the model in the B-SSP which means that if an event changing the SSM state occurs, a communication flow is used to keep the SSM state aligned in the two nodes. State changes occur as a result of an event notified by the B-CCF, in which case B-SSF to B-SCF information flow takes place. The control as to which state changes are reported to the service logic is under the control of the service logic itself. The service logic must send requests to the B-SSP so that the particular state changes that occur are reported. For example, in the *AddBearerToSession* operation mentioned above, in order for the service logic to receive notification that the bearer connection has been set up, it must send a *RequestReportSSMChange*, specifying the transition *BeingSetUp* to *SetUp* prior to sending the message. Thus when the network connection is actually set up, the service logic is informed about the establishment of the connection via an operation *ReportSSMChange* that indicates that the bearer status has changed to the state *SetUp*.

2.3 B-SCF finite state machine

A significant consequence of the SSM and the B-INAP as far as the B-SCP is concerned is the finite state machine on the access side. After the receipt of the message which triggers the service logic, the *ServiceRequest*, the B-SCP has to explicitly arm the necessary SSM state changes in order to keep track of the status of the calls and/or connections. The service logic needs to be informed when connections are released for any reason, and as this is achieved by means of a *ReportSSMChange* message, the service logic must be in a position to accept such a message in any state after the IN service logic is triggered. Figure 4 shows the finite state machine that the B-SCP access manager must

be able to cope with State A represents the idle state where the service logic is waiting for the initial IN trigger (*ServiceRequest*). With this event the state changes to State B. This is an all encompassing state where messages are prepared for sending to the B-SSP but importantly it must also be able to accept messages from the B-SSP during this state. This is due to the fact that calls and/or connections can be released at any time which results in a notification to the service logic.

2.4 User Interaction

In the services considered, end users using a set top box can enter an interactive phase of the service, or navigation which allows the user to enter passwords, update service profiles or make selections that influence the IN service logic. As each service has different requirements, two approaches to user interaction were developed. For simple and generic interaction which is intended to work together with any end system, the feature User Service Interaction (USI) has been introduced. This uses a signalling connection between the end system and the B-SCP to convey user service information. For complex multimedia interaction, a broadband Specialised Resource Function (B-SRF) that supports GUI based interaction with the end system has been introduced.

Connection Oriented Bearer Independent (COBI) has been adopted as a transport means to allow direct interaction between user and service logic. The handling of call related events and call unrelated events are presented in a unified view to the B-SCP by the IN-SSM model. The B-SRF provides the same functionality as the narrowband case with the main exceptions that it consists of its own logic and processing capability to work together with the broadband CPE in providing the services in a user friendly way and that

it interacts with the network through a specialised interface to the B-SCF. The creation of service logic that resides on the B-SRF is not considered but tools for creating the service logic that reside and are executed on the B-SCF are considered.

3. A Service Creation Environment for broadband IN services

The narrowband service creation environment is based on the logical connections of graphical building blocks, referred to as *Generic Service Building Blocks* (or GSBBs) herein, however the concepts can be equally applied to a broadband environment. The GSBBs are an approach to the *Service Independent Block*, or SIB concepts in IN-CS-1. The SCE consists of a finite number of GSBBs that can be selected and customised in a GSBB. Customised instances of the GSBBs or *icons*, are placed on a sketcher and linked together to form the service logic flow required into a picture file. A code generator converts the picture file into run time files required to run the service. There are broadly speaking three classes of GSBBs. *INAP dependent GSBB, INAP independent GSBBs and pictorial GSBBs*. The first class, the INAP *dependent* GSBBS translate into a sequence of B-INAP messages that are exchanged between the B-SCP and B-SSP and/or B-IP. INAP independent GSBBs perform operations that do not relate to INAP operations. The majority relate to database manipulation but also include variable manipulation and service logic flow control. The pictorial class only impacts the layout of the service picture.

The approach within the broadband SCE created was to reuse the existing SLEE within the narrowband product, but develop new INAP dependent GSBBs to handle the functions required by the B-INAP plus new infrastructure ones to support the broadband

functionality such as the abstract view introduced by the Switching State Model and the finite state machine of the service logic.

3.1 Generic Service Building Blocks for broadband services

GSBBs that depend on the new B-INAP, or *B-INAP dependent* GSBBs together with new GSBBs to take into account the impact of the broadband services have been developed. Significantly, B-INAP dependent GSBBs in the original product were retained and are successfully reused without changes. The B-INAP dependent GSBBs developed fall into the following categories:

- Call Control GSBBs
- B-SRF interaction GSBBs
- User-Service Interaction GSBBs
- Other miscellaneous B-INAP dependent GSBBs

The call control GSBBs perform all the necessary operations that allow the connections to be established and deleted between users in the IN service session. The B-SRF interaction GSBBs handle all the operations that instruct the B-SRF to run script based interaction with the user as well as collecting information from the user. The User Interaction GSBBs allow the service logic to handle the end-to-end protocol between the user and the service logic, where the service creator can construct and extract messages to and from the user. Other GSBBs developed allow the triggering and correct termination of IN services and GSBBs that allow the collection of buffered SSM events as a result of the finite state machine implemented for the B-SCP.

For the call control GSBBs, instead of providing a complete view of the SSM, the service creator is only aware of parties and bearer related/bearer unrelated connections. The service creator uses the dictionary number to reference the party objects and uses the identifiers to identify bearers and has no actual visibility of leg objects. The service infrastructure handles the complex association of objects and identifiers performing the necessary mapping into the SSM model. This has the advantage that the service creator needs not be concerned with the complex object associations and relationships that exist.

Figure 7 provides a list of possible GSBBs. All GSBBs relating to database access were retained without any modifications. These data access GSBBs allow for example the look up for time of day routing or area of origin determination. As there is no impact of a broadband network, the building blocks are unaffected. A GSBB that allows the service creator to define a customised data access caters for any special needs of the broadband services.

3.2 GSBB message sequence

Each of the B-INAP dependent GSBBs translates into a sequence of messages that are exchanged between the B-SCP and the B-SSP and/or B-IP. This message sequence is translated from a dynamic description of the GSBB where the information in the messages is populated for a combination of the values inserted by the service creator from a graphical user interface, the SSM model and the service infrastructure. The GSBBs have been created to reflect the type of B-INAP operation. Again, verbs such as *Add and Delete* have been applied to describe the permissible actions in the GSBB. However such actions are restricted to connections or real end users. The action of the

GSBB will result in either the creation or deletion of all the necessary SSM objects in the B-SSP. For example one of the new GSBBs developed, the *BearerControl* GSBB allows the selection of either the deletion of an existing bearer connection or the creation of a new bearer connection between two existing parties. These actions will map on the *DeleteBearer* or *AddBearerToSession* B-INAP operations. When a new bearer connection is requested, new objects relating to the bearer connection and its associated legs are created. Within the B-SCE this is done automatically by the infrastructure thus removing this task form the service creator. This ensures that consistent SSM information is inserted in the messages to the B-SSP. The service creator needs to supply the bearer characteristics (e.g. bandwidth, class, etc.) and the directory number of the parties that are to share the bearer connection.

Each GSBB has a specific message sequence description that describes the messages that are exchanged between the B-SCP and the B-SSP and/or the B-IP. The replies from the B-SSP take the form of state changes relating to objects. The communication indicating this state change will only be sent if the service logic had previously sent a specific message requesting to be informed about the state changes. Part of the GSBB's function is to arm all necessary state changes in the SSM model to allow the GSBB to be informed of the outcome of the request of the required operation. Each call control GSBB automatically arms the necessary state change requests in the form of *RequestReportSSMChange* so that it will always be notified about the outcome of a call control request.

Figure 5 shows the message sequence exchanged between the service logic and the B-

SSP when the *AddBearer* option in the *BearerControl* GSBB is selected. Note, however this shows the expected message sequence under normal conditions and excludes the possibilities of exceptions occurring. The three *RequestsReportSSMChanges* individually arm the state changes that would indicate whether the bearer has been set-up, or either of the end parties has refused to accept the call, or either of the parties has abandoned the call. The GSBB has a status field that will be populated with a value that indicates the outcome of the *AddBearer* request. Additional GSBBs are available to allow the service creator to test the possible values of the status field and take appropriate action in the service picture.

In order to simplify the service creation process, the GSBBs will only allow sequential operations to be performed. That is, until a notification of outcome of the operation is reported, the GSBB will now allow another operation to be performed. As sequential operations are performed, it is possible that a state change is reported that does not relate to the operation that the GSBB has been asked to perform, i.e. for example the release of a separate bearer connection within the same IN session. In such a case the normal message sequence is interrupted to allow this message to be read and its content buffered as an asynchronous event. This is evident in the run-time flow description of the GSBB in figures 6A and 6B. Once the event is buffered, the GSBB will resume its normal action as dictated by the dynamic description. Additional GSBBs have been provided to test and read for such buffered events to allow them to be handled as dictated by the service requirements.

3.3 GSBB run-time action

In addition to a message sequence file, each GSBB has an associated *run-time action file* that describes the actions that the icon will perform. The actions cannot be altered by the service creator once the appropriate GSBB operation has been selected. Figure 6 shows the run-time actions for the AddBearer option in the BearerControl GSBB as described by the message sequence in figure 5.

3.4 Service Creation Environment Architecture

The central architecture of the B-SCE is shown in figure 8. The architecture has three distinct domains: *building block definition*, picture editor and *code generation*.

The *building block definition* is the stage where the generic service building blocks themselves are defined. These include the definition of the message sequence chart described in section 3.2, the runtime actions described in section 3.3. The separation between this definition and the graphical picture editor means that future capabilities are not constrained by the graphical editor.

The *picture editor* is a graphical tool that allows the service creator to select the building blocks from a palette and drag them to a drawing area. They can then be linked together to form a logic flow required by the service requirements. Each building block consists of a property sheet that contains input fields, menus and selection buttons are used to specify the detailed operation. Such a detailed operation may relate to a decision branch criteria, user interaction information to be sent to the end user or the bearer characteristics required to set up a particular bearer connection. The output of the picture editor is a general logic description of a service, without any explicit reference to the B-INAP other

than those at a higher level.

This picture file is acted upon by the *code generator* to create runtime files required to execute the service on a B-SCP. As the picture files do not contain any information about the messages, the code generation uses the GSBB message sequence details and runtime actions to perform the necessary translations for the B-INAP operations. In addition, SSM details and the asynchronous message library details are also used by the code generator to produce the ANSI C source code for the Service Logic Program.

4. Conclusion

The application of an Intelligent layer to broadband networks can be facilitated by a graphical service creation environment. A flexible narrowband system can be expanded to provide the additional complexity imposed by this environment. To realise the services utilising this environment such as advanced broadband video-conferencing the separated control of connections is essential, together with the asynchronous handling of events.

In addition service logic will be required to interwork with complex nodes such as Intelligent Peripherals to provide the User with comparable service navigation techniques.

CLAIMS

1. A broadband graphical service creation environment for creating Intelligent Network services for a Broadband Integrated Services Digital Network/Intelligent Network network, comprising building blocks, a picture editor and code generator, the building blocks being a collection of broadband specific actions, data access and data manipulation routines plus pictorial blocks that define the graphical layout of the service.

2. A broadband graphical service creation environment as claimed in Claim 1, comprising B-IN Application Protocol dependent Generic Service Building Blocks to handle functions required by a B-IN Application Protocol.

3. A broadband service creation environment as claimed in Claim 1 and further comprising Generic Service Building Blocks capable of running specific message sequence, which sequence can be interrupted by some asynchronous events, wherein once the event is handled, the original message sequence can be resumed and the service creation environment is able to generate Service Logic Programs (SLPs) that can support a finite state machine.

Fig.1.

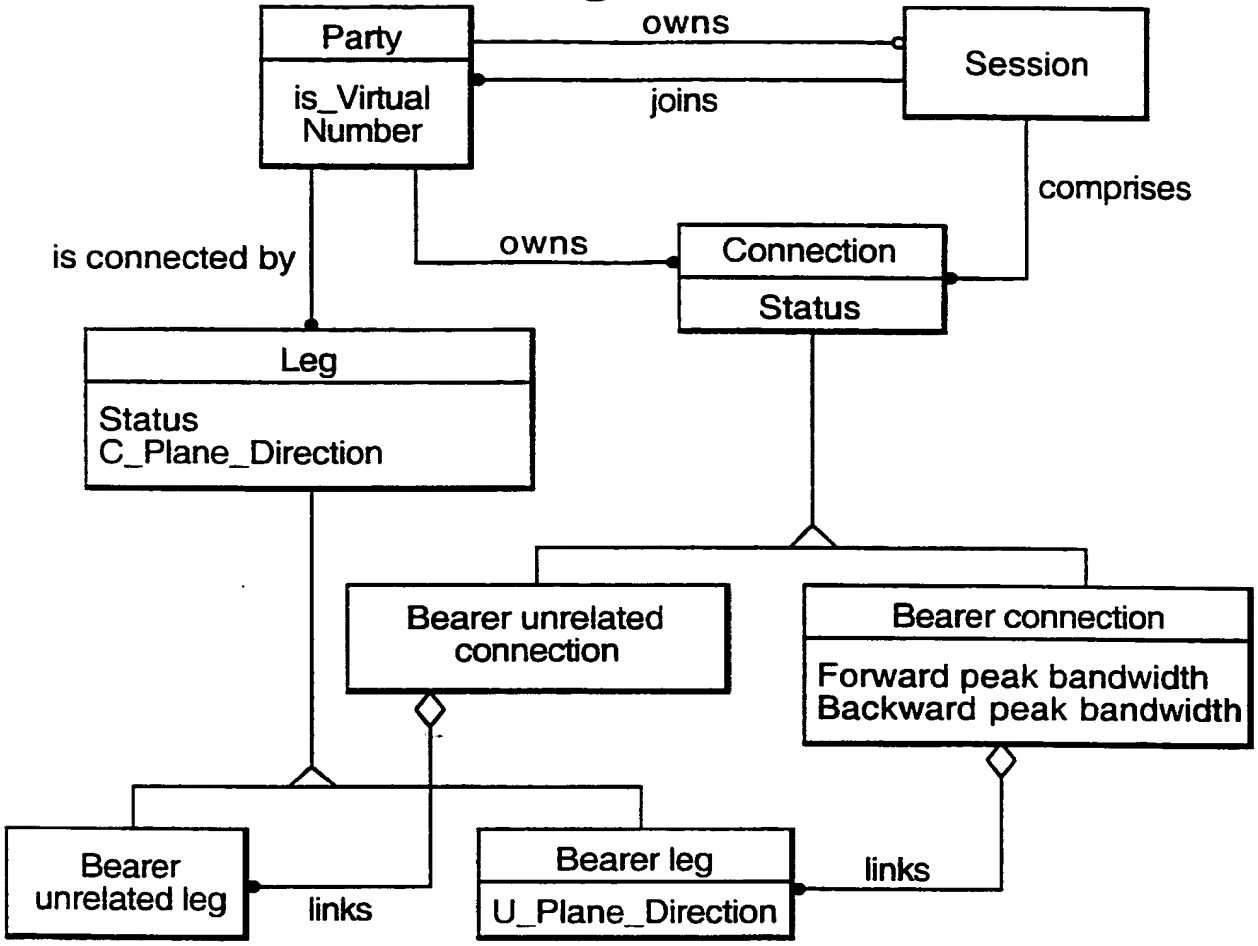

Party
is_Virtual Number
owns
joins
Session
comprises
is connected by
owns
Connection
Status
Leg
Status
C_Plane_Direction
Bearer unrelated connection
Bearer connection
Forward peak bandwidth
Backward peak bandwidth
Bearer unrelated leg
links
Bearer leg
U_Plane_Direction
links

Fig.5.

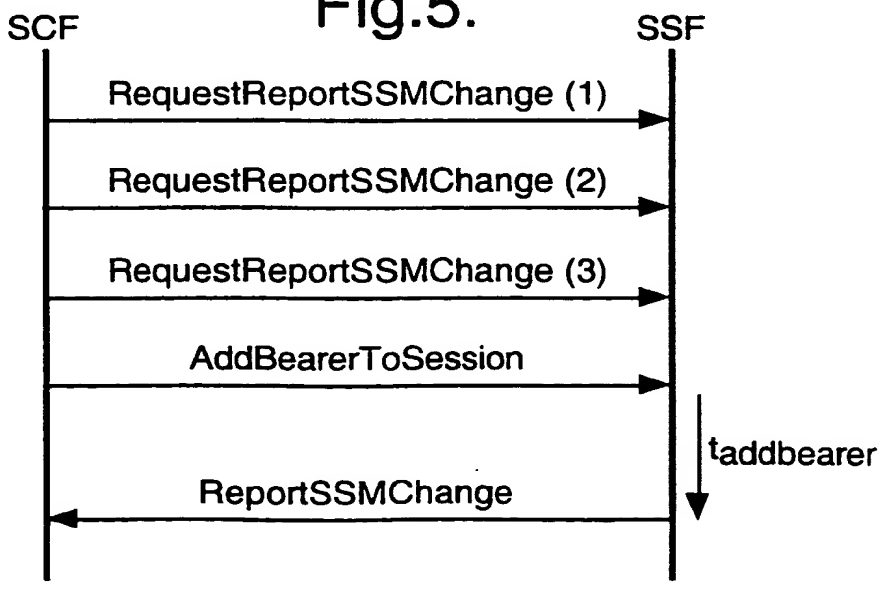

SCF
SSF
RequestReportSSMChange (1)
RequestReportSSMChange (2)
RequestReportSSMChange (3)
AddBearerToSession
taddbearer
ReportSSMChange

Fig.2.

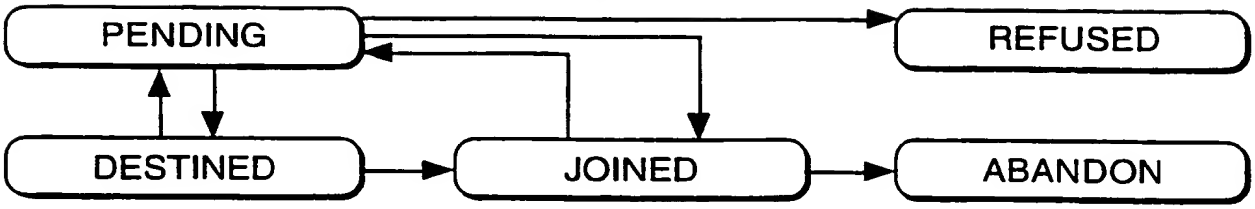


Fig.3.

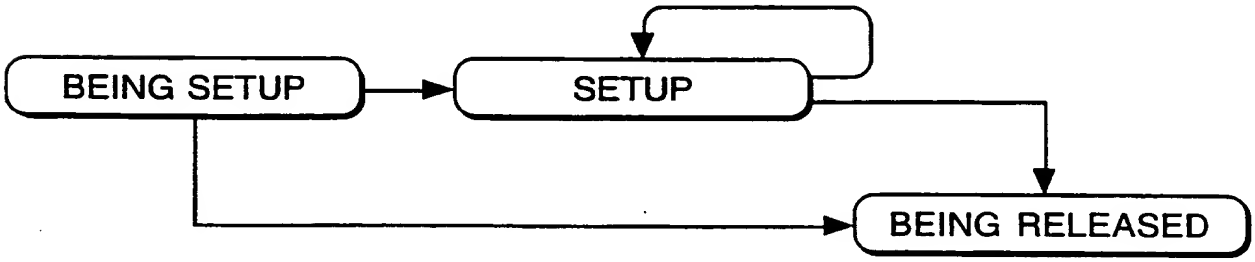


Fig.4.

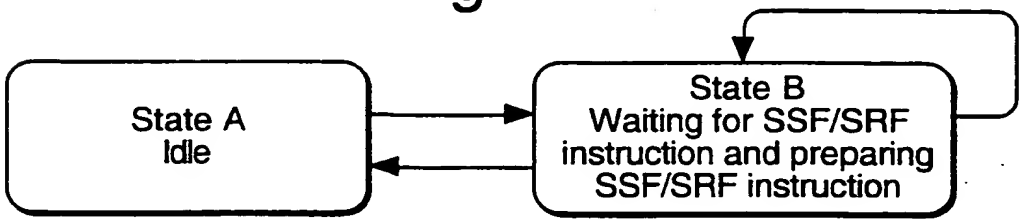


Fig.6A.

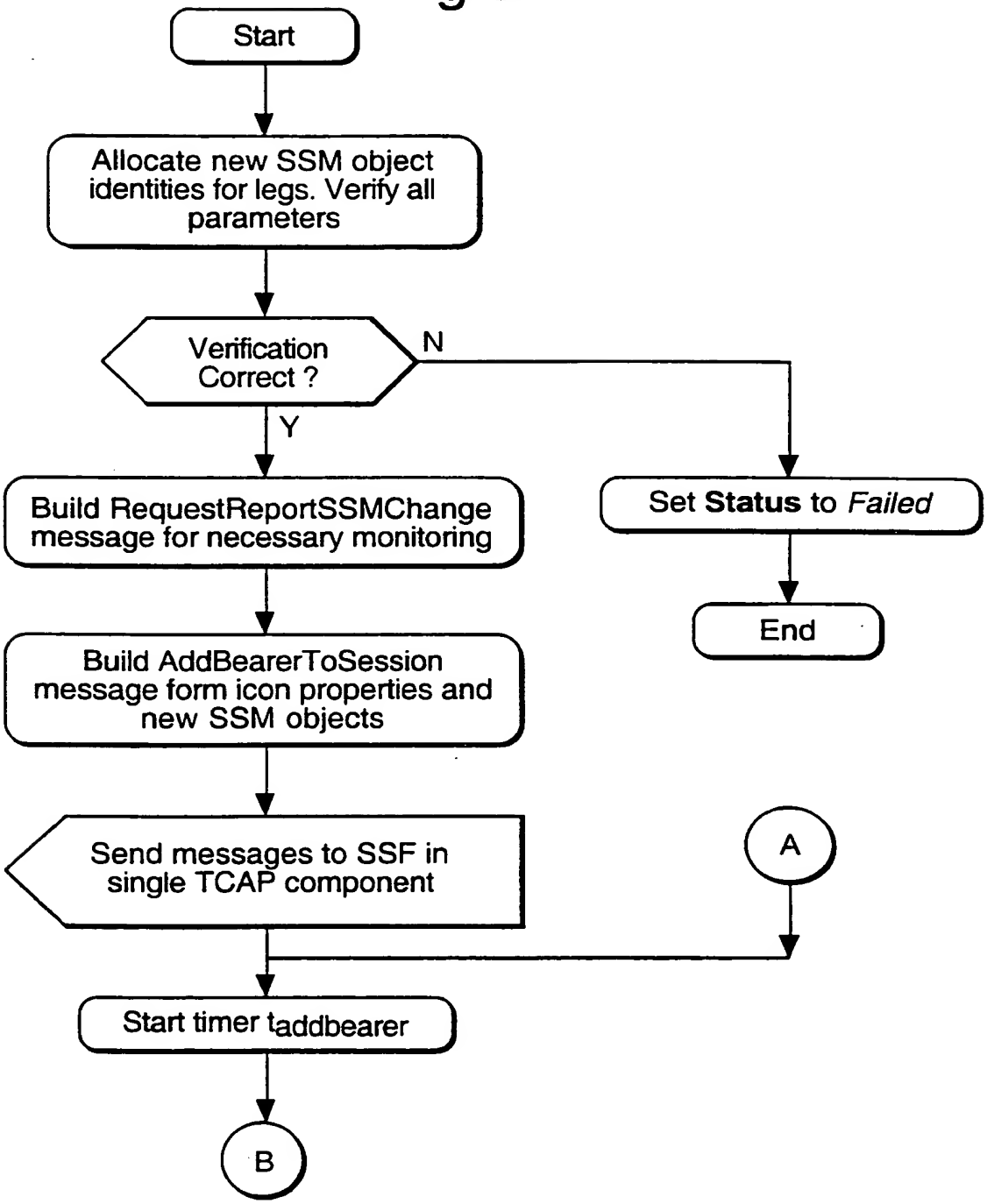

Start
Allocate new SSM object identities for legs. Verify all parameters
Verification Correct ?
N
Y
Set **Status** to *Failed*
End
Build RequestReportSSMChange message for necessary monitoring
Build AddBearerToSession message form icon properties and new SSM objects
Send messages to SSF in single TCAP component
A
Start timer taddbearer
B

Fig.6B.

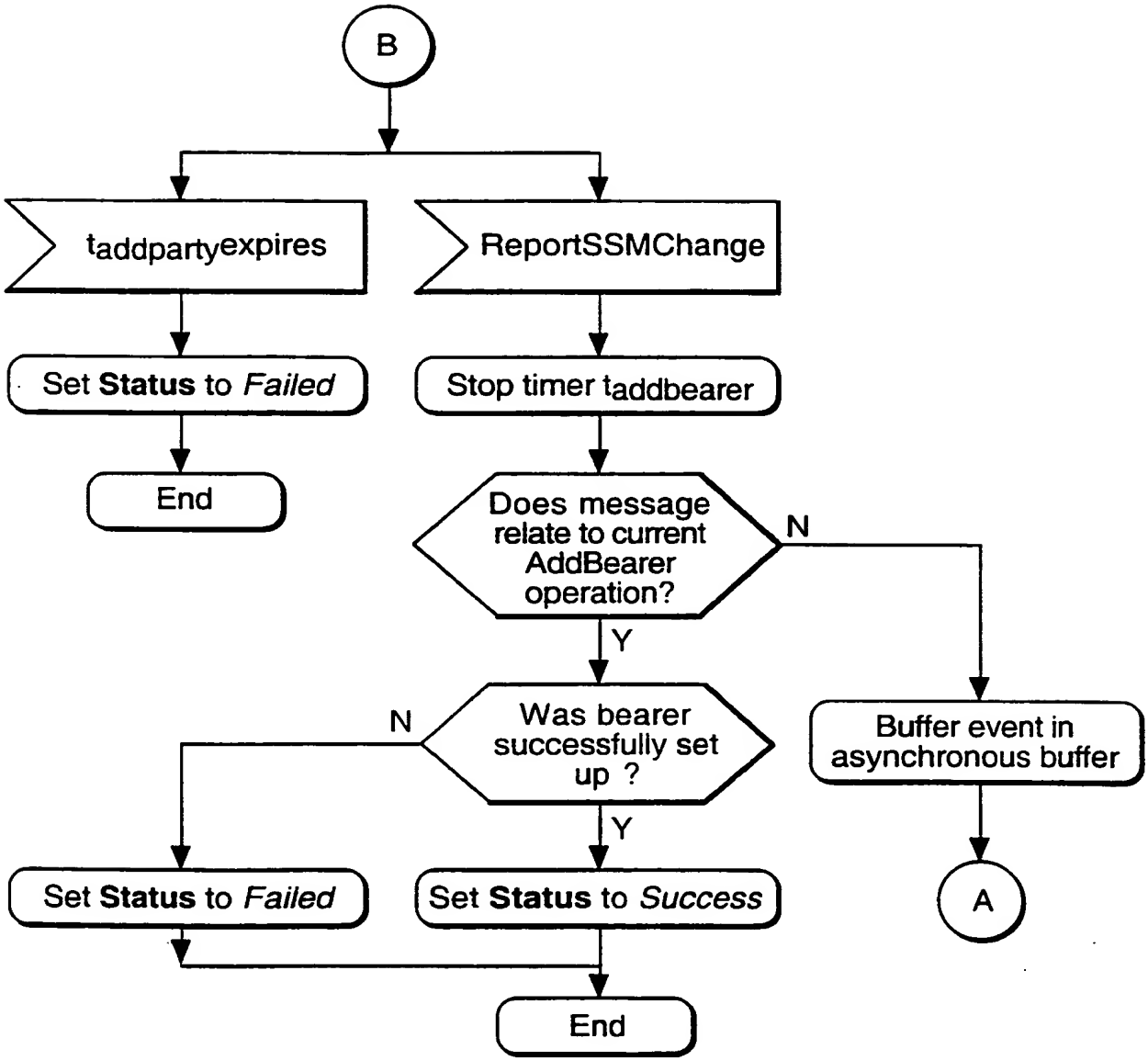
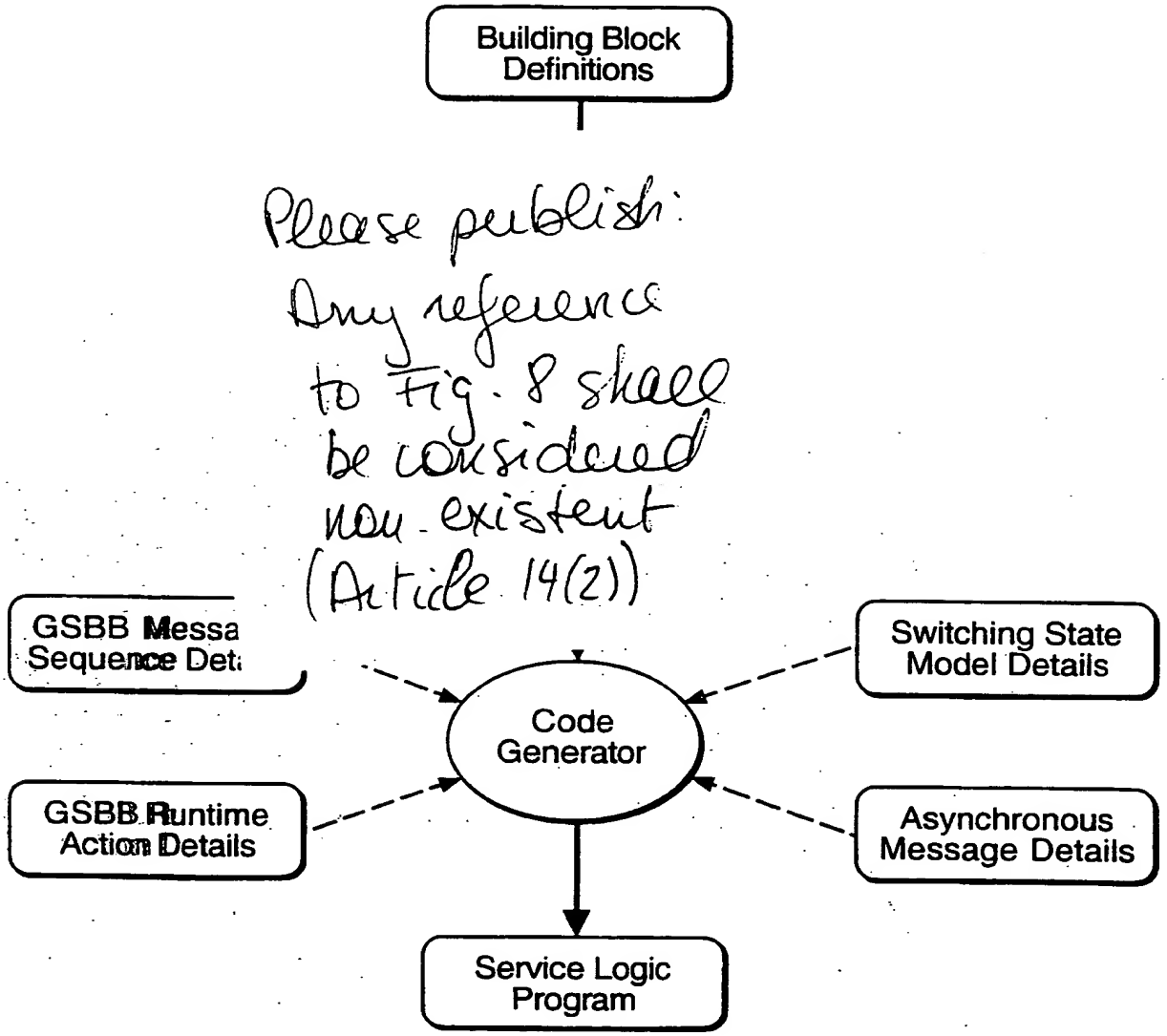

B
taddpartyexpires
ReportSSMChange
Set Status to Failed
Stop timer taddbearer
End
Does message relate to current AddBearer operation?
N
Y
Was bearer successfully set up ?
N
Y
Buffer event in asynchronous buffer
Set Status to Failed
Set Status to Success
A
End

Fig.7.

	Summary of Function
Call Control GSBBs	
BearerControl	Adds or drops bearer connections between existing parties in the session.
PartyView Control	Adds a new party or drops an existing party in the session.
JoinParty	Routes a user initiated connection, or adds a new party to an existing IN session.
IPConnect	Connects a user to an B-IP using various connection options allowed by the B-INAP.
Continue	Restores call processing after an interrupt, by the service logic
IP Interaction GSBBs	
PlayCollect	Specifies a script to be played at the B - IB and information is to be collected from the user.
IPPrompt	Specifies that a script is to be played at the B-IP
IPMonitor	Monitors responses from the B-IP that can contain information from the user
USI GSBBs	
USISpecify	Allows the service creator to initiate the specification of a USI Component
USIElement	Allows the service creator to specify or extract a single constituent IE of a USI component
SendUSI	Allows the service creator to request that the previously specified USI component is sent to the user
Other GSBBs	
Start	Initial trigger for an IN session
End	Terminates an IN session in correct and orderly fashion
AsyncRead	Allows the reading of buffered events such as bearers that have been released.
Monitor	Sets the service logic in a monitor state

Fig.8.



Please publish: Any reference to Fig. 8 shall be considered non-existent (Article 14(2))

INTERNATIONAL SEARCH REPORT

Inte. .onal Application No
PCT/GB 99/00719

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04Q11/04 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MIZUNO O ET AL: "SERVICE SPECIFICATION DESCRIPTION AND SERVICE LOGIC PROGRAM GENERATION FOR INTELLIGENT NETWORKS" INTELLIGENT NETWORKS: THE PATH TO GLOBAL NETWORKING, PROCEEDINGS OF THE INTERNATIONAL COUNCIL FOR COMPUTER COMMUNICATION INTELLIGENT NETWORKS CONFERENCE, TAMPA, MAY 4 - 6, 1992, 4 May 1992 (1992-05-04), pages 430-440, XP000684038 BAYLISS P W (ED)ISBN: 90-5199-091-X paragraph '0003!	1
Y		2,3
	--- -/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 July 1999	26/07/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Staessen, B

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inter .onal Application No
PCT/GB 99/00719

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 95 23483 A (BRITISH TELECOMM ;HUNTER ANDREW TIMOTHY (US); COX RICHARD DEWITT () 31 August 1995 (1995-08-31) page 4, line 26 - page 5, line 29 page 8, line 7 - line 13	2,3
A	EP 0 669 748 A (US WEST TECHNOLOGIES INC) 30 August 1995 (1995-08-30) claim 12	1-3
A	KOLEHMAINEN M: "NOKIA SCE - AN ARCHITECTURE FOR A LIGHTWEIGHT SCE" INTELLIGENT NETWORKS AND NEW TECHNOLOGIES. PROCEEDINGS OF THE IFIP TC6 CONFERENCE ON INTELLIGENT NETWORKS AND NEW TECHNOLOGIES, COPENHAGEN, AUG. 30 - 31, 1995, 30 August 1995 (1995-08-30), pages 107-118, XP000751740 NORGAARD;J; IVERSEN; V B (EDS)ISBN: 0-412-78900-0 the whole document	1-3
A	US 5 701 419 A (MCCONNELL VON K) 23 December 1997 (1997-12-23) column 7, line 32 - column 8, line 13	1

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter[illegible]onal Application No
PCT/GB 99/00719

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9523483 A	31-08-1995	SG 43031 A	17-10-1997
		AU 696018 B	27-08-1998
		AU 1817395 A	11-09-1995
		CA 2183981 A	31-08-1995
		CN 1147325 A	09-04-1997
		EP 0748569 A	18-12-1996
		JP 9509540 T	22-09-1997
		NZ 281276 A	28-07-1997
		US 5812533 A	22-09-1998
EP 0669748 A	30-08-1995	US 5629978 A	13-05-1997
US 5701419 A	23-12-1997	NONE	

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

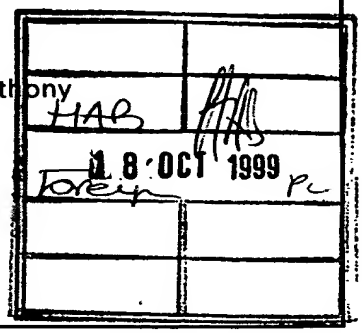
PCT

INFORMATION CONCERNING ELECTED OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

To:

BRANFIELD, Henry, Anthony
GEC Patent Dept.
Waterhouse Lane
Chelmsford
Essex CM1 2QX
ROYAUME-UNI



Date of mailing (day/month/year) 08 October 1999 (08.10.99)	
Applicant's or agent's file reference P/61380/GPTU51	**IMPORTANT INFORMATION**

International application No.	**International filing date** (day/month/year)	**Priority date** (day/month/year)
PCT/GB99/00719	10 March 1999 (10.03.99)	13 March 1998 (13.03.98)

Applicant
MARCONI COMMUNICATIONS LIMITED et al

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

   AP :GH,GM,KE,LS,MW,SD,SL,SZ,UG,ZW
   EP :AT,BE,CH,CY,DE,DK,ES,FI,FR,GB,GR,IE,IT,LU,MC,NL,PT,SE
   National :AU,BG,BR,CA,CN,CZ,DE,GB,IL,JP,KP,KR,MN,NO,NZ,PL,RO,RU,SE,SK,US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

   EA :AM,AZ,BY,KG,KZ,MD,RU,TJ,TM
   OA :BF,BJ,CF,CG,CI,CM,GA,GN,GW,ML,MR,NE,SN,TD,TG
   National :AL,AM,AT,AZ,BA,BB,BY,CH,CU,DK,EE,ES,FI,GD,GE,GH,GM,HR,HU,ID,IN,
   IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MW,MX,PT,SD,SG,SI,SL,TJ,TM,TR,
   TT,UA,UG,UZ,VN,YU,ZW

3. The applicant is reminded that he must enter the "national phase" **before the expiration of 30 months from the priority date** before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing , if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

   Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

   The entry into the European regional phase is postponed **until 31 months from the priority date** for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:
S. Mafla

Telephone No. (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

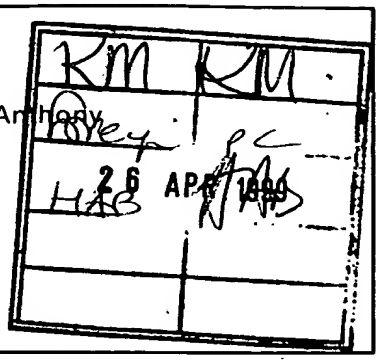
PCT

NOTIFICATION OF RECEIPT OF RECORD COPY

(PCT Rule 24.2(a))

To:

BRANFIELD, Henry, Anthony
GEC Patent Dept.
Waterhouse Lane
Chelmsford
Essex CM1 2QX
ROYAUME-UNI



Date of mailing (day/month/year)	IMPORTANT NOTIFICATION
19 April 1999 (19.04.99)	
Applicant's or agent's file reference	**International application No.**
P/61380/GPTU51	PCT/GB99/00719

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

MARCONI COMMUNICATIONS LIMITED (for all designated States except US)
GRECH, Michael, Louis, Francis (for US)

International filing date	:	10 March 1999 (10.03.99)
Priority date(s) claimed	:	13 March 1998 (13.03.98)
Date of receipt of the record copy by the International Bureau	:	30 March 1999 (30.03.99)
List of designated Offices	:	

AP :GH,GM,KE,LS,MW,SD,SZ,UG,ZW
EA :AM,AZ,BY,KG,KZ,MD,RU,TJ,TM
EP :AT,BE,CH,CY,DE,DK,ES,FI,FR,GB,GR,IE,IT,LU,MC,NL,PT,SE
OA :BF,BJ,CF,CG,CI,CM,GA,GN,GW,ML,MR,NE,SN,TD,TG
National :AL,AM,AT,AU,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CU,CZ,DE,DK,EE,ES,FI,GB,GD,GE,GH, GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KP,KR,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO, NZ,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,US,UZ,VN,YU,ZW

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- [X] time limits for entry into the national phase
- [X] confirmation of precautionary designations
- [X] requirements regarding priority documents

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer:

F. Gateau

Telephone No. (41-22) 338.83.38

INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated in the Notification of Receipt of Record Copy (Form PCT/IB/301) by paying national fees and furnishing translations, as prescribed by the applicable national laws.

The time limit for performing these procedural acts is **20 MONTHS** from the priority date or, for those designated States which the applicant elects in a demand for international preliminary examination or in a later election, **30 MONTHS** from the priority date, provided that the election is made before the expiration of 19 months from the priority date. Some designated (or elected) Offices have fixed time limits which expire even later than 20 or 30 months from the priority date. In other Offices an extension of time or grace period, in some cases upon payment of an additional fee, is available.

In addition to these procedural acts, the applicant may also have to comply with other special requirements applicable in certain Offices. **It is the applicant's responsibility** to ensure that the necessary steps to enter the national phase are taken in a timely fashion. Most designated Offices do not issue reminders to applicants in connection with the entry into the national phase.

For detailed information about the procedural acts to be performed to enter the national phase before each designated Office, the applicable time limits and possible extensions of time or grace periods, and any other requirements, see the relevant Chapters of Volume II of the PCT Applicant's Guide. Information about the requirements for filing a demand for international preliminary examination is set out in Chapter IX of Volume I of the PCT Applicant's Guide.

GR and ES became bound by PCT Chapter II on 7 September 1996 and 6 September 1997, respectively, and may, therefore, be elected in a demand or a later election filed on or after 7 September 1996 and 6 September 1997, respectively, regardless of the filing date of the international application. (See second paragraph above.)

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

CONFIRMATION OF PRECAUTIONARY DESIGNATIONS

This notification lists only specific designations made under Rule 4.9(a) in the request. It is important to check that these designations are correct. Errors in designations can be corrected where precautionary designations have been made under Rule 4.9(b). The applicant is hereby reminded that any precautionary designations may be confirmed according to Rule 4.9(c) before the expiration of 15 months from the priority date. If it is not confirmed, it will automatically be regarded as withdrawn by the applicant. There will be no reminder and no invitation. Confirmation of a designation consists of the filing of a notice specifying the designated State concerned (with an indication of the kind of protection or treatment desired) and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 16-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity to furnish the priority document within a time limit which is reasonable under the circumstances.

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 16-month time limit is the filing date of the earliest application whose priority is claimed.

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

BRANFIELD, Henry, Anthony
GEC Patent Dept.
Waterhouse Lane
Chelmsford
Essex CM1 2QX
ROYAUME-UNI

Foreign HAB
19 MAY 1999

Date of mailing (day/month/year) 10 May 1999 (10.05.99)	
Applicant's or agent's file reference P/61380/GPTU51	**IMPORTANT NOTIFICATION**
International application No. PCT/GB99/00719	International filing date (day/month/year) 10 March 1999 (10.03.99)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 13 March 1998 (13.03.98)
Applicant MARCONI COMMUNICATIONS LIMITED et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).

2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.

3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

4. The **letters "NR"** appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
13 Marc 1998 (13.03.98)	9805243.4	GB	04 May 1999 (04.05.99)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer

Carlos Naranjo CSN

Telephone No. (41-22) 338.83.38

WO 99/48322
PCT/GB99/00719

PATENT COOPERATION TREATY

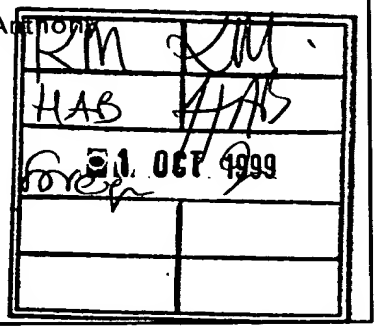
From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:
BRANFIELD, Henry, Anthony
GEC Patent Dept.
Waterhouse Lane
Chelmsford
Essex CM1 2QX
ROYAUME-UNI



Date of mailing (day/month/year) 23 September 1999 (23.09.99)	
Applicant's or agent's file reference P/61380/GPTU51	**IMPORTANT NOTICE**

International application No.	**International filing date** (day/month/year)	**Priority date** (day/month/year)
PCT/GB99/00719	10 March 1999 (10.03.99)	13 March 1998 (13.03.98)

Applicant
MARCONI COMMUNICATIONS LIMITED et al

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
   AU,CN,EP,IL,JP,KP,KR,US

   In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
   AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CU,CZ,DE,DK,EA,EE,ES,FI,GB,GD,GE,GH,GM,HR,HU,
   ID,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,SD,
   SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZW
   The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
   23 September 1999 (23.09.99) under No. WO 99/48322

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, **a demand for international preliminary examination** must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer
J. Zahra

Telephone No. (41-22) 338.83.38

Continuation of Form PCT/IB/308

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

Date of mailing (day/month/year)	IMPORTANT NOTICE
23 September 1999 (23.09.99)	
Applicant's or agent's file reference	**International application No.**
P/61380/GPTU51	PCT/GB99/00719

The applicant is hereby notified that, at the time of establishment of this Notice, the time limit under Rule 46.1 for making amendments under Article 19 has not yet expired and the International Bureau had received neither such amendments nor a declaration that the applicant does not wish to make amendments.

PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

BRANFIELD, H.A.
GEC Patent Department
Waterhouse Lane
Chelmsford
Essex CM1 2QX
GRANDE BRETAGNE

KM | KM
HAB
28 JAN 2000

PCT

WRITTEN OPINION

(PCT Rule 66)

Date of mailing *(day/month/year)*	28. 01. 2000
Applicant's or agent's file reference: P/61380/GPTU51	**REPLY DUE** **within 3 month(s)** from the above date of mailing

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/00719	10/03/1999	13/03/1998

International Patent Classification (IPC) or both national classification and IPC

H04Q11/04

Applicant

MARCONI COMMUNICATIONS LIMITED et al.

1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

I	☒	Basis of the opinion
II	☐	Priority
III	☐	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain document cited
VII	☒	Certain defects in the international application
VIII	☐	Certain observations on the international application

3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 13/07/2000.

Name and mailing address of the international preliminary examining authority:
European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized officer / Examiner
Staessen, B

Formalities officer (incl. extension of time limits)
Reisinger, E
Telephone No. +31 70 340 2974

I. Basis of the opinion

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".*):

Description, pages:

1-14 as originally filed

Claims, No.:

1-3 as originally filed

Drawings, sheets:

1/2-2/2 as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	
Inventive step (IS)	Claims	1 - 3
Industrial applicability (IA)	Claims	

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1) The following documents (D1,D2) are mentioned for the first time in this written opinion; the numbering will be adhered to in the rest of the procedure:

D1: MIZUNO O ET AL: 'SERVICE SPECIFICATION DESCRIPTION AND SERVICE LOGIC PROGRAM GENERATION FOR INTELLIGENT NETWORKS' INTELLIGENT NETWORKS: THE PATH TO GLOBAL NETWORKING, PROCEEDINGS OF THE INTERNATIONAL COUNCIL FOR COMPUTER COMMUNICATION INTELLIGENT NETWORKS CONFERENCE, TAMPA, MAY 4 - 6, 1992, 4 May 1992 (1992-05-04), pages 430-440, XP000684038

D2: WO 95/23483

2) The present application does not satisfy the criterion set forth in Article 33(3) PCT because the subject-matter of the independent claim 1 does not involve an inventive step (Rule 65(1)(2) PCT).

2.1) Document D1 discloses a graphical service creation environment for creating Intelligent Network services for a Intelligent Network comprising an intelligent editor (see e.g. paragraph 3) which comprises building blocks ("parameters"; "LSDL"); a picture editor (see e.g. fig.5) and code generator ("program generotor") , the building blocks being a collection of specific actions, data access and data manipulations routines plus pictorial blocks that define the graphical layout of the service.

The subject-matter of Claim 1 differs from the subject-matter of document D1 in that the environment is explicitly a broadband environment.

It is however believed that the teachings of D1 could be easily adapted to a broadband environment without involving an inventive skill. It is moreover acknowledged in for example D2 (WO 95/23483), which discloses also a user-friendly graphical user interface level (see for example p.4,l. 26 - p.5, l.29) , that such a service creation environment can be easily modified (see p. 8, lines 7-13) for being used in a

broadband environment (here ATM or SDH).

3) Dependent Claims 2 and 3 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, involve an inventive step because they define the "general service building blocks" in more concrete terms and are merely dealing with further constructional details.

4) It is not at present apparent which part of the application could serve as a basis for a new claim which would satisfy the criteria set forth in Article 33(1) PCT. Should the applicant nevertheless regard some particular matter as suitable an independent claim including such particular matter should be filed taking account of Rule 6.3(b) PCT. The applicant should also indicate in the letter of reply the difference vis-à-vis the state of the art and the significance thereof.

Re Item VII
Certain defects in the international application

1) The present claim 1 should be cast in the two-part form. The features of D1 as stated at point 2.1 of Item V are also included in claim 1 of the present application. Accordingly, these features should be placed in the preamble of the two-part form claim as required by Rule 6.3(b) PCT.

Remark: Alternatively D2 can also be considered as representing the closest prior art because it defines explicitly a broadband environment.

2) To meet the requirements of Rule 5.1(a)(ii) PCT, the documents D1 and D2 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

3) The applicant will have to bring the description into conformity with the amended claims; care should be taken during revision, especially of the introductory portion including any statement of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed, (Article 34(2)(b) PCT).

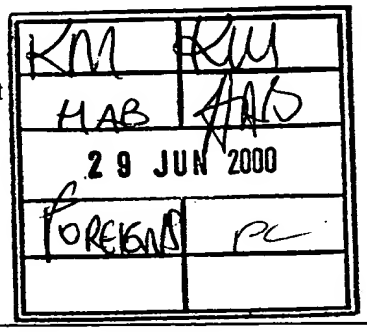
4) Reference parentheses in brackets should be inserted in the claims to increase their intelligibility, Rule 6.2 (b) PCT. This applies to both the preamble and the characterizing portion.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

BRANFIELD, H.A.
GEC Patent Department
Waterhouse Lane
Chelmsford
Essex CM1 2QX
GRANDE BRETAGNE



PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing *(day/month/year)*	26. 06. 2000
Applicant's or agent's file reference P/61380/GPTU51	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/00719	10/03/1999	13/03/1998

Applicant
MARCONI COMMUNICATIONS LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Smits, A Tel.+31 70 340-3596

Form PCT/IPEA/416 (July 1992)

PATENT COOPERATION TREATY

PCT

REC'D 27 JUN 2000
WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
P/61380/GPTU51		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB99/00719	10/03/1999	13/03/1998

International Patent Classification (IPC) or national classification and IPC
H04Q11/04

Applicant
MARCONI COMMUNICATIONS LIMITED et al.

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☒ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
23/09/1999	26. 06. 2000

Name and mailing address of the international preliminary examining authority:
European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized officer
Staessen, B

Telephone No. +31 70 340 2818

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/00719

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1,3-14	as originally filed			
2,2a	as received on	29/05/2000	with letter of	25/05/2000

Claims, No.:

3	as originally filed			
1,2	as received on	29/05/2000	with letter of	25/05/2000

Drawings, sheets:

1/2,2/2	as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1,2
	No:	Claims
Inventive step (IS)	Yes:	Claims 1,2
	No:	Claims
Industrial applicability (IA)	Yes:	Claims 1,2
	No:	Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1) The following document (D1) is mentioned in this report;

D1: MIZUNO O ET AL: 'SERVICE SPECIFICATION DESCRIPTION AND SERVICE LOGIC PROGRAM GENERATION FOR INTELLIGENT NETWORKS' INTELLIGENT NETWORKS: THE PATH TO GLOBAL NETWORKING, PROCEEDINGS OF THE INTERNATIONAL COUNCIL FOR COMPUTER COMMUNICATION INTELLIGENT NETWORKS CONFERENCE, TAMPA, MAY 4 - 6, 1992, 4 May 1992 (1992-05-04), pages 430-440, XP000684038;

2) The present application satisfies the criterion set forth in Article 33(3) PCT because the subject-matter of the independent claim 1 involves an inventive step (Rule 65(1)(2) PCT).

2.1) Document D1 , which represents the closest prior art and which applies to the field of narrowband graphical service creation environments and which has been identified in the description at page 2 , discloses such a graphical service creation environment for creating Intelligent Network services for a Intelligent Network (B-ISDN / IN) comprising an intelligent editor (see e.g. paragraph 3) which comprises building blocks ("parameters"; "LSDL"); a picture editor (see e.g. fig.5) and code generator ("program generotor") , the building blocks being a collection of specific actions, data access and data manipulations routines plus pictorial blocks that define the graphical layout of the service and comprising "Generic Service Building Blocks" capable of running a specific message sequence.

The subject-matter of Claim 1 differs from the subject-matter of document D1 in that the environment is a broadband environment and that

the said specific message sequence may be interrupted by some asynchronous events, wherein once an event is handled , the original message sequence is resumed.

The problem to be solved can be seen in the realization of a graficall service creation

environment for creating IN Services for broadband services which has to deal with the additional complexity related to broadband services (see description at page 13, lines 10 - 16).

None of the documents cited in the prior art disclose or suggest to solve the treatment of such asynchronous events in broadband networks.
This feature is important because in B-ISDN/IN the service creation is dealing with the events relating to multiple calls wherein the sequence of arrival of messages at the service logic can be unpredictable.

3) Claim 2 is fully dependent on claim 1. Present claim 1 is based on the claims 1 and 3 as originally filed.

Re Item VII
Certain defects in the international application

Reference parentheses in brackets should have been inserted in the claims to increase their intelligibility, Rule 6.2 (b) PCT. This applies to both the preamble and the characterizing portion.

functionality. The broadband SCP (B-SCP) is realised as enhancements to an existing narrowband product. Service logic programs required to provide the complex broadband services to run on the B-SCP have been created using a broadband graphical environment (B-SCE)

Mizuno et al in "Service Specification Description and Service Logic Program Generation for Intelligent Networks" Intelligent Networks : The Path to Global Networking, Proceedings of the International Council for Computer Communication Intelligent Networks Conference, Tampa, May 4-6, 1992, pages 430-440, discloses a narrowband graphical service creation environment for creating Intelligent Network Services for an Intelligent Network comprising an intelligent editor which comprises building blocks; a picture editor and code generator; the building blocks being a collection of specific actions, data access and data manipulation routines and pictorial blocks that define the graphical layout of the service.

According to the present invention there is provided a broadband graphical service creation environment for creating Intelligent Network services for a Broadband Integrated Services Digital Network/Intelligent Network network, the broadband graphical service creation environment comprising building blocks, a picture editor and code generator, the building blocks being a collection of broadband specific actions, data access and data manipulation routines plus pictorial blocks that define the graphical layout of the service and further comprising Generic Service Building Blocks capable of running a specific message sequence, characterized in that the specific message sequence may be interrupted by some asynchronous events, wherein once an event is handled, the original message sequence is resumed .

The present invention will now be described by way of example, with reference to the accompanying drawings, in which:-

Figure 1 shows the Entity Relationship Diagram fo the Switching State Model;

Figure 2 shows the State Diagram for the Legs of Figure1;

Figure 3 shows the State Diagram for the Connection of Figure 1;

Figure 4 shows the Finite State Machine for the Broadband Service Control Function ;

Figure 5 Shows the Message Sequence for the *AddBearer* Option in the *BearerControl* Generic Service Blocks;

Figures 6A and 6B combined show the Runtime Action of the *AddBearer* Option in the *BearerControl* GSBB;

(70)

CLAIMS

1. A broadband graphical service creation environment for creating Intelligent Network services for a Broadband Integrated Services Digital Network/Intelligent Network network, the broadband graphical service creation environment comprising building blocks, a picture editor and code generator, the building blocks being a collection of broadband specific actions, data access and data manipulation routines plus pictorial blocks that define the graphical layout of the service and further comprising Generic Service Building Blocks capable of running a specific message sequence, characterized in that the specific message sequence may be interrupted by some asynchronous events, wherein once an event is handled, the original message sequence is resumed .

2. A broadband graphical service creation environment as claimed in Claim 1, wherein the service creation environment is able to generate Service Logic Programs that can support a finite state machine.

INTERNATIONAL SEARCH REPORT

Inte. onal Application No
PCT/GB 99/00719

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04Q11/04 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MIZUNO O ET AL: "SERVICE SPECIFICATION DESCRIPTION AND SERVICE LOGIC PROGRAM GENERATION FOR INTELLIGENT NETWORKS" INTELLIGENT NETWORKS: THE PATH TO GLOBAL NETWORKING, PROCEEDINGS OF THE INTERNATIONAL COUNCIL FOR COMPUTER COMMUNICATION INTELLIGENT NETWORKS CONFERENCE, TAMPA, MAY 4 - 6, 1992, 4 May 1992 (1992-05-04), pages 430-440, XP000684038 BAYLISS P W (ED)ISBN: 90-5199-091-X paragraph '0003!	1
Y		2,3
	--- -/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 July 1999	26/07/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Staessen, B

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Inte .onal Application No
PCT/GB 99/00719

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 95 23483 A (BRITISH TELECOMM ;HUNTER ANDREW TIMOTHY (US); COX RICHARD DEWITT () 31 August 1995 (1995-08-31) page 4, line 26 - page 5, line 29 page 8, line 7 - line 13	2,3
A	EP 0 669 748 A (US WEST TECHNOLOGIES INC) 30 August 1995 (1995-08-30) claim 12	1-3
A	KOLEHMAINEN M: "NOKIA SCE - AN ARCHITECTURE FOR A LIGHTWEIGHT SCE" INTELLIGENT NETWORKS AND NEW TECHNOLOGIES. PROCEEDINGS OF THE IFIP TC6 CONFERENCE ON INTELLIGENT NETWORKS AND NEW TECHNOLOGIES, COPENHAGEN, AUG. 30 - 31, 1995, 30 August 1995 (1995-08-30), pages 107-118, XP000751740 NORGAARD;J; IVERSEN; V B (EDS)ISBN: 0-412-78900-0 the whole document	1-3
A	US 5 701 419 A (MCCONNELL VON K) 23 December 1997 (1997-12-23) column 7, line 32 - column 8, line 13	1

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter onal Application No
PCT/GB 99/00719

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9523483 A	31-08-1995	SG 43031 A	17-10-1997
		AU 696018 B	27-08-1998
		AU 1817395 A	11-09-1995
		CA 2183981 A	31-08-1995
		CN 1147325 A	09-04-1997
		EP 0748569 A	18-12-1996
		JP 9509540 T	22-09-1997
		NZ 281276 A	28-07-1997
		US 5812533 A	22-09-1998
EP 0669748 A	30-08-1995	US 5629978 A	13-05-1997
US 5701419 A	23-12-1997	NONE	

[redacted]TENT COOPERATION TREAT[redacted]

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION** see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
P/61380/GPTU51		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/GB 99/ 00719	10/03/1999	13/03/1998
Applicant		
MARCONI COMMUNICATIONS LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a trans[redacted] of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

   [X] as suggested by the applicant.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

   [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

[redacted] national Application No
[redacted]T/GB 99/00719

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04Q11/04 H04Q3/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MIZUNO O ET AL: "SERVICE SPECIFICATION DESCRIPTION AND SERVICE LOGIC PROGRAM GENERATION FOR INTELLIGENT NETWORKS" INTELLIGENT NETWORKS: THE PATH TO GLOBAL NETWORKING, PROCEEDINGS OF THE INTERNATIONAL COUNCIL FOR COMPUTER COMMUNICATION INTELLIGENT NETWORKS CONFERENCE, TAMPA, MAY 4 - 6, 1992, 4 May 1992 (1992-05-04), pages 430-440, XP000684038 BAYLISS P W (ED)ISBN: 90-5199-091-X paragraph '0003!	1
Y	--- -/--	2,3

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 July 1999	26/07/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Staessen, B

1

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

[redacted] national Application No
[redacted] T/GB 99/00719

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 95 23483 A (BRITISH TELECOMM ;HUNTER ANDREW TIMOTHY (US); COX RICHARD DEWITT () 31 August 1995 (1995-08-31) page 4, line 26 - page 5, line 29 page 8, line 7 - line 13	2,3
A	EP 0 669 748 A (US WEST TECHNOLOGIES INC) 30 August 1995 (1995-08-30) claim 12	1-3
A	KOLEHMAINEN M: "NOKIA SCE - AN ARCHITECTURE FOR A LIGHTWEIGHT SCE" INTELLIGENT NETWORKS AND NEW TECHNOLOGIES. PROCEEDINGS OF THE IFIP TC6 CONFERENCE ON INTELLIGENT NETWORKS AND NEW TECHNOLOGIES, COPENHAGEN, AUG. 30 - 31, 1995, 30 August 1995 (1995-08-30), pages 107-118, XP000751740 NORGAARD;J; IVERSEN; V B (EDS)ISBN: 0-412-78900-0 the whole document	1-3
A	US 5 701 419 A (MCCONNELL VON K) 23 December 1997 (1997-12-23) column 7, line 32 - column 8, line 13	1

1

INTERNATIONAL SEARCH REPORT

[redacted]ation on patent family members

[redacted]rnational Application No
[redacted]CT/GB 99/00719

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9523483 A	31-08-1995	SG 43031 A	17-10-1997
		AU 696018 B	27-08-1998
		AU 1817395 A	11-09-1995
		CA 2183981 A	31-08-1995
		CN 1147325 A	09-04-1997
		EP 0748569 A	18-12-1996
		JP 9509540 T	22-09-1997
		NZ 281276 A	28-07-1997
		US 5812533 A	22-09-1998
EP 0669748 A	30-08-1995	US 5629978 A	13-05-1997
US 5701419 A	23-12-1997	NONE	